Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

SCIENCE

FRIDAY, JANUARY 28, 1921

CONTENTS

Electrification of Water and Osmotic Flow: DR. JACQUES LOEB 77

Henry Andrews Bumstead: PROFESSOR R. A. MILLIKAN 84

Scientific Events:—

Polar Research; Anthropological Publications of the Canadian Arctic Expedition; Administration of the Alaska Forests; Fishery Matters in Congress; The Washington Academy of Sciences; Samuel J. Meltzer. 85

Scientific Notes and News 88

University and Educational News 90

Discussion and Correspondence:—

A Meteor Fall in the Atlantic: HENRY S. WASHINGTON. *Musical Notation:* DR. T. P. HALL. *Pulsation of a Cat's Heart after Death:* DR. HORACE GUNTHORP. *Stock Cultures of a Protozoon:* DR. JOSEPH H. BODINE. 90

Quotations:—

The British Committee for Aiding Men of Letters and Science in Russia 93

Special Articles:—

Star Time Observations with an Engineer's Y-Level: DR. WILLARD J. FISHER 94

The American Society of Naturalists: PROFESSOR A. FRANKLIN SHULL 95

The American Society of Zoologists: PROFESSOR W. C. ALLEE 97

MSS. intended for publication and books, etc., intended for review should be sent to The Editor of Science, Garrison-on-Hudson, N. Y.

ELECTRIFICATION OF WATER AND OSMOTIC FLOW[1]

I

THE exchange of water and solutes between the cell and the surrounding fluid is one of the important factors in the mechanism of life, and a complete theory of the osmotic flow is therefore a postulate of biology. It was a marked advance when the experiments of Pfeffer and de Vries led van't Hoff to the formulation of the modern theory of osmotic pressure. According to this theory the molecules of the solute behave like the molecules of a gas in the same volume and at the same temperature, and the gas pressure of the solute measures the "attraction" of a watery solution for pure water through a strictly semipermeable membrane. Yet it is obvious to-day that in a liquid the electrical forces between solvent and solute must play a rôle and no adequate provision is made for these forces in van't Hoff's law. Traube rejected van't Hoff's theory altogether, suggesting instead that the osmotic flow was from the liquid with lower to the liquid with higher surface tension (and higher intrinsic pressure).

Tinker has shown that van't Hoff's theory for osmosis holds strictly only in the case of *ideal* solutions, *i.e.*, when the process of solution occurs without heat of dilution and change in volume, but that in the case of *non-ideal* solutions Traube's ideas explain the deviations from the gas law which are bound to occur. When two different *ideal* solutions containing equal numbers of particles of solute in equal volume are separated by a strictly semipermeable membrane, equal numbers of molecules of water will diffuse simul-

[1] Presidential address prepared for the Chicago meeting of the American Society of Naturalists, December 30, 1920.